



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,958	12/04/2003	Shogo Kiyota	5332-8PCON	7410
27799	7590	06/05/2006		
			EXAMINER	
			DAHIMENE, MAHMOUD	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/727,958	KIYOTA ET AL.	
	Examiner Mahmoud Dahimene	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 07 April 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-13 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____ .  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/4/03, 4/7/06</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____ .                                  |

***Response to Arguments/Remarks***

1. Applicant's election with traverse of group I (claims 1-13) in the reply filed on 4/13/2006 is acknowledged. The traversal is on the ground(s) that no explanation or proof, that the product can be made by a materially different process, has been provided, is persuasive, however, after further consideration an explanation or proof that the product can be made by a materially different process is presented as follows.

The product as claimed in claims 14-30 can be made by a different process such as the one described by the reference of Akatsu in the following detailed action. Therefor, the method inventions of group I (claims 1-13) are distinct from the product inventions of group II (claims 14-30) as set forth by the office action dated November 15, 2005, the examination of group II of the claims will present an undue burden because the claims of group II have acquired a separate status in the art as shown by their different classification.

The requirement is still deemed proper and is therefor made FINAL.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 2 are rejected under 35 U.S.C. 102(a) as being anticipated by Akatsu Masamichi et al. (JPO2001250678A).

Regarding claim 1, the reference of Akatsu discloses a transparent electrode plate for organic EL element wherein a metallic-oxide transparent electrode (conductive) layer on a thermoplastics transparent substrate (claim 3), and this thermoplastics substrate satisfies the requirement of a ten-point average of roughness Rz is 4 nm or less (page 2, paragraphs 0007-0008 of translation).

As to claim 2, the reference of Akatsu discloses It is desirable to use a melting extrusion method for obtaining the substrate surface smoothness (page 4, paragraph 0019) no polishing is mentioned.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akatsu Masamichi et al. (JPO2001250678A) in view of Ikeda et al. (US 6,553,788).

Regarding claims 3 and 4, it is noted that the reference of Akatsu is silent about the surface of the transparent substrate is subjected to an acidic aqueous solution containing hydrofluoric acid or an alkaline aqueous solution containing potassium hydroxide or sodium hydroxide, and the surface of the transparent substrate is subjected to alkaline washing comprising washing using an alkaline liquid.

The reference of Ikeda teaches a method of manufacturing a transparent substrate where scrub-etching is used to smooth the surface of the substrate and forming a fine texture free of asperity in which the average surface roughness Ra is in a range between 0.4 and 3.0 nm and the ratio of the 10-point mean roughness (Rz) to the average surface roughness (Ra) is 14 or less. In example 4 (column 9, line 35) Ikeda cites "Then, the glass substrate was immersed in a 0.03 wt % aqueous hydrofluoric acid solution at 50.degree. C. for 30 minutes and rinsed with hot pure water to remove chemicals. Next cleaning in an aqueous potassium hydroxide solution was performed".

It is noted that Ikeda uses scrub-etching, however, Ikeda uses scrub-etching to bring the roughness from a higher value to a much lower value, then follows with

immersion (without scrubbing) in hydrofluoric acid solution, and later in potassium hydroxide solution for cleaning.

Akatsu's substrate does not use any scrubbing or polishing to obtain the desired smoothness, however, it would appear that Akatsu's substrate could also benefit from the processing steps of Ikeda involving immersion (without scrubbing) in hydrofluoric acid solution and later cleaning in potassium hydroxide solution as described in example 4.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process Akatsu by adding the two processing steps of Ikeda as described above because Ikeda teaches the hydrofluoric acid immersion improves the smoothness (column 8, line 10) and the potassium hydroxide cleans the substrate. One of ordinary skill in the art would have been motivated to add the two steps of Ikeda in order to obtain a smoother and cleaner substrate which is desirable for further EL formation.

#### ***Claim Rejections - 35 USC § 103***

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (US 6,553,788).

Ikeda describes a method for manufacturing a magnetic disk from a transparent glass substrate using polishing or scrub-etching to obtain a smoothness Rz less or equal to 4 nm as defined by a surface roughness Ra in a range from 0.4 nm to 3 nm and a ratio of a 10-point mean roughness Rz to the average surface roughness Ra of

14 or less (meaning  $Rz/Ra = 14$  or less) (see claim 1) which yields (after calculation) an  $Rz$  values of 5.6 nm or less (calculated when  $Ra = 0.4$  nm and  $Rz/Ra < 14$ ) which includes an  $Rz$  value of 4 nm or less.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process Ikeda and perform further post polishing treatments such as in example 3 (column 9, line 14) until a value of less than 4 nm is reached for  $Rz$  because Ikeda teaches values of less than (calculated) 5.6 nm for  $Rz$  are achievable, so it appears that repeating the post polishing treatment of any example on a substrate would yield further reduction of the roughness. One of ordinary skill in the art would have been motivated to perform further post polishing process steps, such as the ones in example 3 or example 4, in order to obtain a smoother surface on the substrate which is desirable for obtaining even lesser amount of asperity on the surface.

### ***Claim Rejections - 35 USC § 103***

7. Claims 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (US 6,553,788) as applied to claim 5, and further in view of Ishibashi et al. (US 6,423,125) and Mitani et al (US 6,568,995).

As discussed above Ikeda teaches, "Then, the glass substrate was immersed in a 0.03 wt % aqueous hydrofluoric acid solution at 50.degree. C. for 30 minutes and rinsed with hot pure water to remove chemicals. Next cleaning in an aqueous potassium hydroxide solution was performed"

Art Unit: 1765

It is noted that the method of Ikeda is silent about a cerium oxide powder for polishing the transparent substrate and sulfuric and ascorbic acids washing.

The reference of Ishibashi teaches cerium oxide powder with predetermined mean particle diameter is conventionally used for polishing to obtain very smooth surfaces (column 5, line 47), and sulfuric acid and ascorbic acids are also used in the method and they are conventionally used in the art (column 4, line 30).

The reference of Mitani teaches a method of cleaning glass substrate wherein he found from experiment results that the washing solution containing nitric acid and ascorbic acid gave a higher dissolving rate of lanthanoid oxides than other combinations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Ikeda by adding a polishing step using cerium oxide powder and a cleaning step using a nitric acid and ascorbic acid mixture as described in the methods of Ishibashi and Mitani respectively because those methods are conventionally used for polishing of transparent surfaces for obtaining smooth surfaces as needed in the fabrication of magnetic disks and because reducing contaminants is also desirable. One of ordinary skill in the art would have been motivated to modify the method of Ikeda in order to obtain a cleaner and even smoother surface.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mahmoud Dahimene whose telephone number is (571)

272-2410. The examiner can normally be reached on week days from 8:00 AM. to 5:00 PM..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
MD

NADINE NORTON  
SUPERVISORY PATENT EXAMINER

